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ABSTRACT

This report describes the longitudinal research conducted in an early intervention program since 1966. The program is characterized by the use of paraprofessionals serving as home visitors and parent educators. Data collection has included measures of children's behavior and development, parent-child interactions, and parent variables such as locus of control and self concept. The research has been directed toward the analysis of questions concerned with: (1) effectiveness of educational home visits for parents (home visits vs. educational home visits), (2) use of the professionally designed, Piaget-based, language-oriented curriculum vs. curricula developed by experienced paraprofessionals with little theoretical background, (3) effects of providing a comprehensive program (home visits and group experiences for children) at age two vs. continuous parent training from birth, and (4) comparisons of intervention which takes place directly with children vs. parent education. Results are presented in tables throughout the report. The program has developed into a Project Follow Through program sponsor. It is discussed in terms of analyzing child factors and materials and family factors based on underlying assumptions and postulates. It is concluded that the basic model of intervention works, although many refinements in the delivery system, training courses, and measurement procedures are needed. (DP)

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AN EARLY INTERVENTION PROJECT: A LONGITUDINAL LOOK

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PS 007388

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The projects reported herein were partially supported by grants from the Fund for the Advancement of Education, Children's Bureau, and the National Institute of Mental Health, Department of Health, Education, and Welfare.

The purposes of this paper are to present you with a description of our longitudinal work, to state our assumptions and postulates, the means we used to test them, and our results, and to comment on both the effort and our findings in terms of today's real world.

DESCRIPTION OF THE PROGRAM

Before going into detail, let us begin with a brief overview. We have conducted since 1966 a series of intervention research efforts, in all of which paraprofessionals served as home visitor parent educators who demonstrated specially designed home learning activities to the parent (usually the mother) so that she in turn would engage in broadly-defined instructional interaction with her child. Table 1 shows the chronology of these projects along the top line, with their spin-offs into development etc. on the other lines. Here we are concerned with only the top line. On Tables 2 through 6 are shown the characteristics of the longitudinal series. On Tables 7 through 9 I have indicated the projects which are in-depth studies emerging from the first set.

The PEP project (Table 2) was a basic engineering effort to answer such practical questions as to whether we could develop and install a delivery system, and develop a set of materials to deliver. Obviously, the existence of Table 1 indicates we were successful. Note on Table 2 that we had two control groups of about 30 each. One of the control groups was designed to look at the issue of making a visit as compared to making an educational visit. In one control group, a group of graduate nurses visited the families on a systematic basis, but conducted

TABLE 1

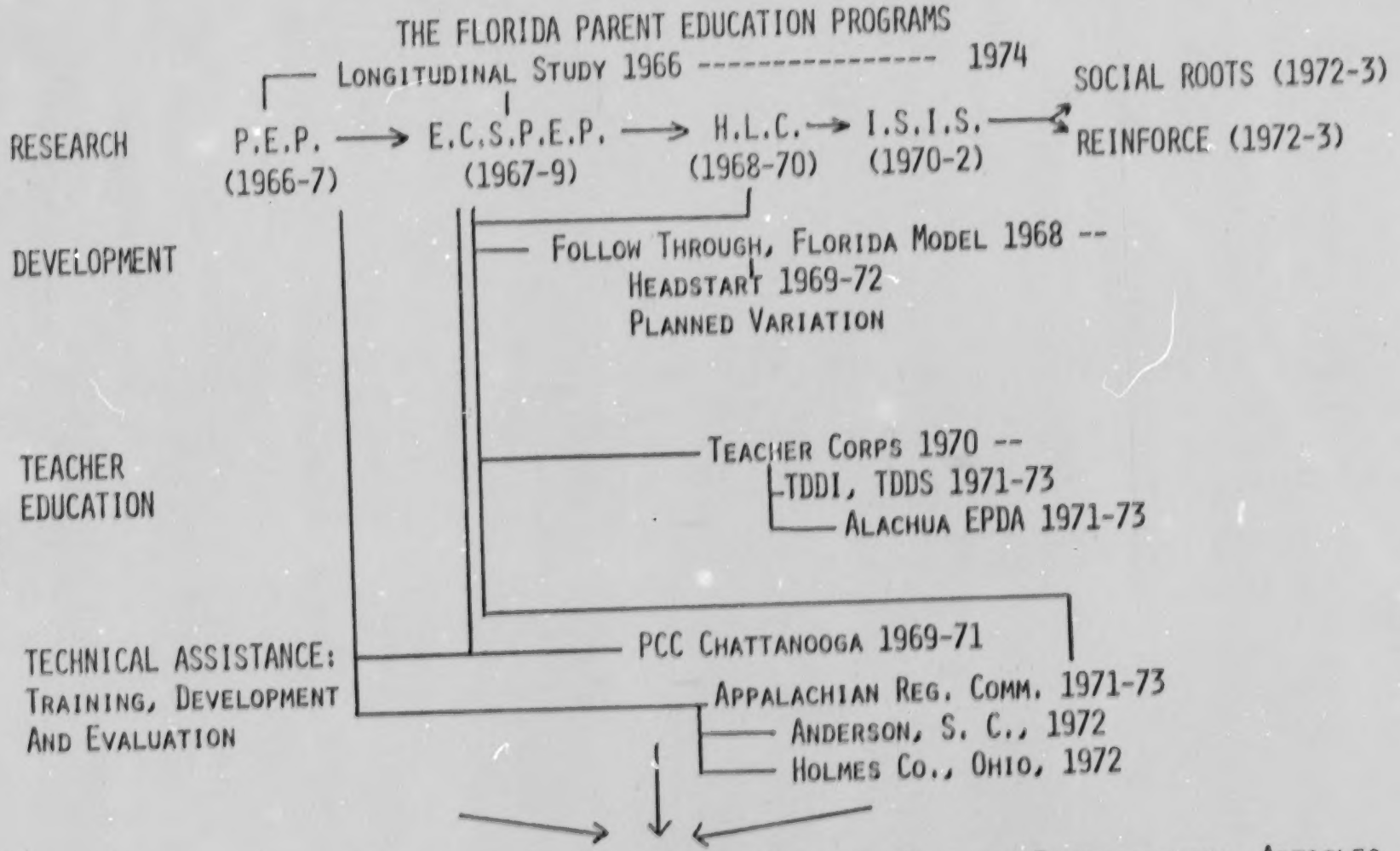
THE FLORIDA PARENT EDUCATION PROGRAMS
LONGITUDINAL STUDY 1966 ---------- 1974
SOCIAL ROOTS (1972-3)
REINFORCE (1972-3)
RESEARCH
P.E.P. (1966-7)
E.C.S.P.E.P. (1967-9)
H.L.C. (1968-70)
I.S.I.S. (1970-2)
DEVELOPMENT
FOLLOW THROUGH, FLORIDA MODEL 1968 --
HEADSTART 1969-72
PLANNED VARIATION
TEACHER EDUCATION
TEACHER CORPS 1970 --
TDDI, TDDS 1971-73
ALACHUA EPDA 1971-73
TECHNICAL ASSISTANCE: TRAINING, DEVELOPMENT AND EVALUATION
PCC CHATTANOOGA 1969-71
APPALACHIAN REG. COMM. 1971-73
ANDERSON, S. C., 1972
HOLMES CO., OHIO, 1972
DISSEMINATION
PUBLICATIONS: TWO BOOKS, RESEARCH REPORTS, DISSERTATIONS, ARTICLES
CONFERENCES: HEADSTART, AERA, APA, SRCD, NAEYC, MERRILL-PALMER
FILM: PLAYING FOR KEEPS (ARC)
VIDEO TAPES
WORKSHOPS: LOCAL, REGIONAL, NATIONAL

TABLE 2

P. E. P.

CHARACTERISTICS OF PARENT EDUCATION PROGRAM

1. PARENTS OF CHILDREN 3 MONTHS - 12 MONTHS OLD
2. PARAPROFESSIONAL HOME VISITORS, ONCE A WEEK FOR 39 WEEKS
3. "PIAGET" AND LANGUAGE-ORIENTED ACTIVITIES
4. 150 FAMILIES, 15 PARENT EDUCATORS
5. TWO CONTROL GROUPS OF ABOUT THIRTY EACH
6. GAINESVILLE AND TWELVE SURROUNDING RURAL COUNTIES
7. "DISADVANTAGED" - ECONOMIC CRITERION
8. FUND FOR THE ADVANCEMENT OF EDUCATION SUPPORT
9. JULY, 1966 - JUNE, 1967

no parent education. The purpose was to explore the Hawthorne effect of simply visiting as being an important criteria. The other control group was the standard kind. Families were randomly assigned to treatment and to these two control groups.

The first effort was followed by the second project (Table 3) which was a little more sophisticated, a little more organized, and also a little more complicated. We broke the original experimental group up and randomly assigned half as a new control group. Since we found no significant differences on scores of the control groups at age one, we treated them as common pool and randomly assigned half to the experimental group in the second year. A group of brand new parent educators with one professional supervisor were instructed to develop their own curriculum, not to rely on what we had developed, so we could explore the question of whether a Piaget based, language oriented curriculum was any better or any worse than a curriculum put together by people who have a lot of experience with infants, but not necessarily with any theoretical base. The results (test scores at age one) indicated that it didn't really make any difference which one we used, but I will come to the results later. This led into a third phase (Table 4). We followed these children up into the third year of life. However, we made one significant change. Up to this point all of the intervention had been of the home visit nature, on roughly the once a week schedule. We felt that a group experience for two year olds would be an important additive. The children were placed in what we called home learning centers, or backyard centers, five children at a

TABLE 3

E. C. S. P. E. P.

EARLY CHILD STIMULATION THROUGH PARENT EDUCATION PROJECT

1. PARENTS OF CHILDREN 3 MONTHS - 24 MONTHS OLD

2. CONTINUED HOME VISITATION TO SAME POPULATION AND GEOGRAPHIC AREA BY PARAPROFESSIONALS, SAME SCHEDULE AS P.E.P.

3. COMPARISON OF TWO CURRICULAE FOR 3 - 12 MONTHS

4. TREATMENT GROUPS INCLUDED:

   a) EXPERIMENTAL 3 - 24 MONTHS

   b) CONTROL 3 - 24 MONTHS

   c) EXPERIMENTAL 3 - 12 MONTHS
      CONTROL 12 - 24 MONTHS

   d) CONTROL 3 - 12 MONTHS
      EXPERIMENTAL 12 - 24 MONTHS

5. CHILDREN'S BUREAU, SRS, HEW SUPPORT

6. JULY, 1967 - JUNE, 1969

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TABLE 4

H. L. C.

A HOME LEARNING CENTER APPROACH TO EARLY STIMULATION

1. PARENTS OF CHILDREN 24 - 36 MONTHS
2. SMALL GROUP EXPERIENCE (5 CHILDREN) for TWO 2-HOUR SESSIONS A WEEK IN HOME CENTER
3. STAFF: PARAPROFESSIONAL CENTER DIRECTOR AND HOME VISITOR, MOTHER-AIDE
4. CURRICULUM DEVELOPMENT FOR AGE GROUP
5. TREATMENT GROUPS INCLUDE LONGITUDINAL EXTENSION OF PEP, ECSPE AND NEW GROUPS (SEE NEXT TABLE)
6. NATIONAL INSTITUTE OF MENTAL HEALTH DEPT. OF HEALTH, EDUCATION AND WELFARE SUPPORT
7. JULY, 1969 - AUGUST, 1971: FIELD WORK
8. AUGUST, 1971 - TO DATE: LONGITUDINAL FOLLOW-UP

time, for four hours a week in 2 2-hour periods. These were homes of mothers in the project; they were again a mixture of urban homes in the Gainesville area, and rural homes all around the twelve county area. In some of the Gainesville situations, these were homes newly opened in housing projects and in turnkey housing in the east Gainesville section. The mother who lived in the home was employed as an aide to the backyard center director, who was the parent educator, converted into a home learning center director as well as a home visitor. Each parent educator still carried ten children, so she met groups in the center and she continued to meet with the mothers on a once a week basis. We also went out and found new two year olds who had not been in the study at all, so that we could look more particularly at the effects of people coming in at age two and having one year of the combined program versus those who had a continuing program. We are still engaged in the longitudinal study of these families. Tables 5 and 6 contain the treatment design and the basic measurement tools. There are eight groups, allowing us to examine length and timing, and we have collected a variety of process (Parent Educator Weekly Report) as well as product (interview, test score) data which enable us to examine our postulates and assumptions, translated into hypotheses.

Table 6 shows a language measure for children and mothers at twenty-four and thirty-six months. This was not originally designed into the project, but was the work of Resnick (1972). This was a measure of the language in a free play situation with the mother present during the five minute period before the child moved into the actual

TABLE 5

LONGITUDINAL STUDY - TREATMENT DESIGN

CHILD'S AGE BY MONTHS

GROUP	3 - 12	12 - 24	24 - 36	48, 60, 72
1) E	HOME VISIT	HV	HOME LEARNING CENTER/HV	TEST
2) EE/C	HV	HV	CONTROL	TEST
3) C/EE	CONTROL	HV	HLC/HV	TEST
4) E/C/E	HV	CONTROL	HLC/HV	TEST
5) E/CC	HV	CONTROL	CONTROL	TEST
6) C/E/C	CONTROL	HV	CONTROL	TEST
7) C/C/E	CONTROL	CONTROL	HLC/HV	TEST
8) C	CONTROL	CONTROL	CONTROL	TEST

TABLE 6

LONGITUDINAL STUDY - MEASUREMENT DESIGN

(INFANT'S AGE IN MONTHS)

	3	12	24	36	48	60	72
				CHILDREN			
EXPERIMENTAL AND CONTROL		GRIFFITH SERIES	BAYLEY SERIES	STANFORD-BINET	S-B	S-B	S-B
			LANGUAGE	LEITER	LEITER	PRESCHOOL INVENTORY	PRESCHOOL INVENTORY
				PPVT	PPVT	PPVT	
				LANGUAGE			
EXPERIMENTAL ONLY				WELD SEMS			
				MOTHERS			
EXPERIMENTAL AND CONTROL	SOCIAL REACTION INVENTORY	SRI	SRI	INTERVIEW	INT	INT	HOME INTERVIEW
	HOW I SEE MYSELF	HISM	HISM				
		LANGUAGE	LANGUAGE	LANGUAGE			
		DEMOGRAPHIC	DEMOG				
EXPERIMENTAL ONLY	PEWR [PARENT EDUCATOR WEEKLY REPORT ON VISIT]	PEWR	PEWR	PEWR			

testing situation.

We were interested in how the children behaved in the Home Learning Center. The Weld is a situational event sampling procedure. The SEMS is the Scott Effectiveness Motivation Scale used by Kronstadt (1973) in her dissertation as a measure of achievement motivation.

Since the project was a parent education project, we felt that it was important to gather a variety of information about the mothers. This is not because we were not interested in fathers, but because in half the families there was no father present consistently in the home, and therefore it was far easier to measure the essential caretaker, the mother. The Social Reaction Inventory is a measure of internal-external control of reinforcements based on the Rotter, the How I See Myself is a self-report scale of feelings of interpersonal adequacy, home school relationships, and feelings of competence.

We gathered a good deal of demographic information about the size and composition of the family, the mother's education, her age, number of children, housing conditions, and so forth. As I mentioned above, the longitudinal work is still in process. The children are turning six now.

Based on these three projects there were a number of questions and concerns that arose over the years, so Dr.Jester and I designed the ISIS project (Table 7). We didn't know at the time that the acronym, Isis, was the Egyptian goddess of fertility, which was a shame because we are really after the other end of the line!

As you see on Table 7, we wanted to look at the question of professional versus paraprofessional home visitation. We had only used

TABLE 7

I. S. I. S.

INSTRUCTIONAL STRATEGIES IN INFANT STIMULATION

1. PARENTS OF CHILDREN 3 - 12 MONTHS
2. PARAPROFESSIONAL VERSUS PROFESSIONAL HOME VISITOR: EFFECTS ON MATERNAL TEACHING BEHAVIOR, CHILD PERFORMANCE
3. EXAMINATION OF SEX DIFFERENCES
4. EXAMINATION OF CHILD VERSUS PARENT AS TARGET
5. 128 FAMILIES AND 30 CONTROLS
6. DISADVANTAGED POPULATION IN GAINESVILLE AREA
7. EXTENSIVE VIDEO TAPING (7 PER FAMILY, ONCE EACH 6 WEEKS)
8. NIMH, HEW SUPPORT
9. MARCH, 1970 - DECEMBER, 1971

paraprofessionals, other projects up to that time of which we were aware, notably DARCEE, Levenstein, Weikart had used professionals. We were also interested in the fact that in the earlier project we seemed to be getting a sex by treatment effect: girls seemed to be benefiting more from the intervention than boys. Yet some of our other data seemed to indicate that maternal attitudes were more influential in effecting boys' performance than in effecting girls' performance. We wanted to look more closely at the socialization process as best we could inside this type of project. We also wanted to see if, at least as measured at age one, it makes any difference if you work directly with the child or whether the mother is the target and you hope that she in turn will work with the child. The 128 families were divided into the various kinds of treatment groups to allow us to look at these questions.

One of the main gains from this project is listed as point seven. Every six weeks the home visit actually took place in an off-campus apartment. We video-taped the home visit beginning at the three month point, and have a massive array of raw data on the 128 families showing the growth in the mother, in the child, the changes in behavior in the parent educator over time. These tapes are being re-analyzed in our two current projects (Tables 8 and 9). Time does not permit discussion of these.

A re-look at Table 1 shows how a programmatic research effort can lead into development, technical assistance, changes in University programs, and dissemination to the general public.

TABLE 8

SOCIAL ROOTS OF COMPETENCY

1. REEXAMINATION OF VIDEO TAPES FROM I. S. I. S.

2. USE OF ESCALONA AND HARVARD (WHITE, WATTS) SCALES FOR MOTHER-INFANT INTERACTION

3. ENLARGEMENT OF DEFINITION OF COMPETENCY BEYOND BAYLEY MENTAL DEVELOPMENT INDEX

4. NIMH, HEW SUPPORT

5. SEPTEMBER, 1972 - AUGUST, 1973

TABLE 9

THE EFFECT OF REINFORCEMENT ON INFANT PERFORMANCE

1. REEXAMINATION OF I. S. I. S. VIDEO TAPES

2. INFANT VOCALIZATIONS AND MATERNAL REINFORCEMENT

3. INDEPENDENT VARIABLES: BAYLEY MENTAL DEVELOPMENT INDEX, TOTAL INFANT VOCALIZATIONS, PERFORMANCE ON STANDARDIZED TASK AT 12 MONTHS

4. NIMH, HEW SUPPORT

5. SEPTEMBER, 1972 - AUGUST, 1973

Since 1968 we've been involved in the Follow Through project as a program sponsor. Our model is characterized by the use of paraprofessionals in a home visit program, but also includes the work of paraprofessionals in the classroom and a much greater involvement of the parents themselves in the decision making process including the development of curriculum and in all of the aspects of the program. These activities stem out of and relate to the research effort. Another outgrowth of the basic research has been the development of teacher education programs: the Teacher Corps project, and the Teacher Training in Developing Institutions programs in the Department of Childhood Education both use the parent education and involvement philosophy and model. Incidentally, the Department of Elementary Education changed its name to Childhood Education to emphasize its expanded role in preschool years.

As Table 1 shows, the research effort led to a variety of activities both on and off campus, which in turn fed our thinking about what further research and demonstration needs to be done. A viable program needs all these elements.

Analysis of the Program

Let us shift now to the heart of the matter. Why engage in such work, and is it worth it? The procedure for analysis is that developed by the ASCD Commission on Instructional Theory, (Gordon, 1968) which leaned heavily on ideas from Robert Travers. The premise is that any instructional program or curriculum program can be analyzed in terms of the way it handles the interaction among three major sets of variables: the pupil characteristics or the assumed pupil characteristics of those

the program is designed for, the goals that the program has, and the instructional setting characteristics that are created as the pathway along which it is assumed that pupils will move toward goals (Table 10). In order for this scheme to make sense, however, we must go back a step further and seek the derivation of the goals. What basic assumptions or postulates or hypotheses did we have about why any such activity ought to be engaged in? We developed a series of postulates and assumptions about the child and about the mother. For each of these postulates and assumptions then, it is possible to state what we assumed the pupil characteristics to be as they entered the program, to look at what other factors in the environment, even though they are not being manipulated in their research, might be playing a role in effecting the result or in contributing to the operation. We have called this category "demographic factors".

Based on our assumptions, it was possible to state a goal and to describe the means by which we would attempt to get to that goal. Finally, we can ask, did it all add up, and what does it mean in terms of contribution to the larger literature?

Analysis of Child Factors

Let us look first at the children. There are five basic postulates. Table 11 contains the information on the first set of postulates. We assumed that the child would enter the situation with some level of intellectual performance although we had no way of measuring that entering level at three months. We believe that intellectual performance is a function of experience and not a given, because obviously

Table 10

Analytic Dimensions

1. POSTULATES AND ASSUMPTIONS

2. ASSUMED ENTERING PUPIL CHARACTERISTICS

3. DEMOGRAPHIC FACTORS

4. GOALS

5. INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM

6. RESULTS

7. COMMENTS

we seek a change in the level of intellectual performance. Our instructional situation was a series of sequenced tasks. But they were not sequenced in such a way that you had to follow task four after three after two after one, they were rather sets of sequences. The choices as to which one to use at the moment was an individual matter of the parent educator and the mother, but generally they were sequenced in terms of an expectation about the growth of the child. The language input was both built into the materials for the mother and in the parent educator's instructions and demonstrations.

To understand the results at age five, remember that group 1, the first experimental group, which was in for three years, has been out of the program for two years. Group 2 had been out of the program for three years and the children who were in for the first year only (group 5) have been out of the program for four years. As the children enter kindergarten are there any lasting effects over a period from at least two years to four years after the program? At age five the experimental group is superior to the control group on the Stanford-Binet and on the Caldwell Preschool Inventory, the only two measures that we have so far analyzed, (Tables 12 and 13). At age three and four we factor-analyzed the Stanford-Binet. Age three factors were language, memory, and perceptual-motor. Across all three factors, the children who were in for three years were significantly higher than the controls (Gordon, 1971). Age four factors are shown on Table 11. Those children who were in three years, the first two years, and the first year only were significantly higher than the controls on all three factors (Gordon

Table 11

CHILD FACTOR (1)

POSTULATES AND ASSUMPTIONS:

(a) INTELLECTUAL PERFORMANCE IS A FUNCTION OF EXPERIENCE.

(b) A CONTENT BASED UPON PIAGETIAN COGNITIVE DEVELOPMENT THEORY AND LANGUAGE DEVELOPMENT ORIENTATION BEST PROMOTES INTELLECTUAL PERFORMANCE.

(c) THE DEVELOPMENT OF THE MOTHER AS A TEACHER YIELDS "PAY-OFF" IN PUPIL GROWTH.

ENTERING PUPIL CHARACTERISTICS:

INTELLECTUAL PERFORMANCE: NO MEASURE AT 3 MONTHS.

CHILD GOAL: RAISE LEVEL OF INTELLECTUAL PERFORMANCE.

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

CONTENT (INFANT): SEQUENCED TASKS, LANGUAGE INPUT; ORGANIZATION: TRAINING OF MOTHER; IN BYC: INDIVIDUAL TUTORING PLUS FREE PLAY; HOME VISITS.

RESULTS:

(a) AT AGE 5, EXPERIMENTAL GROUP SUPERIOR TO > CONTROLS ON STANFORD-BINET, PSI.

(b) AT AGES 3 AND 4, STANFORD-BINET WAS FACTOR ANALYZED. AGE 3 FACTORS WERE: LANGUAGE, MEMORY, PERCEPTUAL-MOTOR. EXPERIMENTAL ALL 3 YEARS > CONTROLS. AGE 4 FACTORS WERE: COGNITIVE PROCESSES: SYMBOLIC; COGNITIVE PROCESSES: ICONIC, VISUAL DISCRIMINATION. EXPERIMENTAL 3 YEARS, FIRST 2 YEARS AND FIRST YEAR > CONTROLS ON ALL FACTORS.

COMMENTS:

THE LONG ~~RANGE~~ EFFECTS (AT LEAST 2 YEARS AND UP TO 4 YEARS LATER) OF PARTICIPATION STILL ARE EVIDENT. THE DIFFERENCES WERE NEVER OF A GREAT MAGNITUDE, BUT HAVE BEEN RELIABLE OVER THE YEARS. OUR BELIEF IS THAT IT IS NOT DUE TO SPECIFIC ACTIVITIES, BUT TO CHANGE IN MOTHER-CHILD INTERACTION AND FAMILY ACTIVITIES. THE USE OF FACTORS IN ADDITION TO TOTAL STANFORD-BINET SCORE HIGHLIGHTS THE COGNITIVE ASPECTS WHICH SEEM TO BE INFLUENCED.

Table 12
Means and Stanford Deviations for Stanford Binet at Age 5

Treatment Group	N	$\bar{X}$	SD
All 3 Years	25	96.60[a,d]	14.61
First 2 Years	11	95.27[c,f]	10.27
Second 2 Years	9	95.22[f]	13.09
First & Third Year	11	91.45	11.32
First Year	11	97.55[b,e]	18.65
Second Year	15	86.40	11.46
Third Year	48	92.58[c,f]	10.34
Control	52	88.81	12.45

a. Significantly higher than Control $p > .01$
b. Significantly higher than Control $p > .025$
c. Significantly higher than Control $p > .05$
d. Significantly higher than Second Year $p > .01$
e. Significantly higher than Second Year $p > .025$
f. Significantly higher than Second Year $p > .05$

Table 13
Means and Stanford Deviations for Preschool Inventory at Age 5

Treatment Group	N	$\bar{X}$	SD
All 3 Years	23	43.57[a,d,f,g]	9.24
First 2 Years	11	41.91[b,e]	8.04
Second 2 Years	8	46.50[a,d,f,g]	11.31
First & Third Year	9	35.33	10.55
First Year	12	40.08[c]	13.10
Second Year	17	34.24	11.56
Third Year	49	37.73	10.96
Control	52	34.29	10.22

a. Significantly higher than Control $p > .01$
b. Significantly higher than Control $p > .025$
c. Significantly higher than Control $p > .05$
d. Significantly higher than Second Year $p > .01$
e. Significantly higher than Second Year $p > .05$
f. Significantly higher than Third Year $p > .025$
g. Significantly higher than First & Third Year $p > .025$

1972). The differences at four are clearer than at age three, and interestingly even a bit clearer at age five. The long range effects are evident; they are statistically significant. The question is whether they are practically significant. They are not magnificent gains of 24 IQ points; they're more in the neighborhood of 8 and 9 IQ points. On the factors they look a little better. Cognitive processes: sympbolic, for example has eight items. The mean differences were as much as two items, which is a pretty worthwhile difference. But it would be foolish to say that it was the effect of a single activity or a set of specific activities at age one that are now showing up at ages three, four, and five. I think what accounts for this is the fact that we did something with that parent that got her going and in the intervening years she is doing something that is still having some of that payoff. When we look at the maternal factors we will see a little more specifically what her actions were.

The second basic assumption (Table 14) was that the child's age at entry would effect the holding power. Our assumption was, the earlier the better. As indicated on Table 5 we are able to examine each one year program and each two year program by starting age of the child. Binet scores show that those who were in the first year only are significantly higher than those in the second year only and tend to be higher than those in the third year only. There may also be a recency effect for the third year, since they surpass the second year. Those who were in for the first year only have been out now four years and are still significantly higher than the controls. Those who were

Table 14

CHILD FACTOR (2)

POSTULATES AND ASSUMPTIONS:

AGE OF ENTRY EFFECTS LONG-TERM HOLDING POWER.

ENTERING PUPIL CHARACTERISTICS (CHILD):

AGE.

PROGRAM GOAL:

TO DETERMINE OPTIMUM TIME FOR IMPLEMENTATION.

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

GROUPS ENTERING AT 3, 12, 24 MONTHS.

RESULTS:

ON STANFORD-BINET AT 5,(a) 1 YEAR ONLY AND 3 YEAR ONLY > CONTROLS; (b) FIRST YEAR ONLY > 2 YEAR ONLY AND TEND TO BE HIGHER THAN 3 YEAR ONLY; (c) 3 YEAR > 2 YEAR: (d) NO DIFFERENCE BETWEEN FIRST 2 YEARS AND SECOND 2 YEARS, BOTH > CONTROLS.

ON PSI AT 5, (a) FIRST YEAR ONLY > CONTROL; (b) OTHER ONE YEAR ONLY (2 OR 3) NO SIGNIFICANT DIFFERENCE FROM CONTROL; (c) NO SIGNIFICANT DIFFERENCE TO EACH OTHER; (d) NO DIFFERENCE BETWEEN FIRST 2 YEARS AND SECOND 2 YEARS, BOTH > CONTROLS.

COMMENTS:

THE SECOND YEAR ONLY GROUP HAS BEEN CONSISTENTLY LOW OVER THE YEARS, ALTHOUGH RANDOMLY ASSIGNED AND NO SIGNIFICANT DIFFERENCE ON BAYLEY AT AGE 2. EITHER PROGRAM NOT EFFECTIVE, OR SOMETHING ABOUT THIS YEAR.
OF SPECIAL NOTE IS THE PERFORMANCE OF FIRST YEAR ONLY - FOUR YEARS LATER. THERE IS A TENDENCY FOR THE EARLIER THE BETTER; THE LONGER (IF IT IS CONSISTENT) THE BETTER.

in for the third year only are also still higher than the controls. There are no differences in scores for the consistent two year groups. They are both higher than the controls, but equal to each other.

The scores on the Caldwell Preschool Inventory show that on the first year only group is higher than the controls, but the other single year groups are not. Both two consecutive year groups are higher than controls, but not different from each other. The second year only group has been consistently low at ages three, four, and five, although there was no difference on the Griffiths at entry point into the group. I have a hunch, and that is all it is, that there are at least two factors playing roles. First, we know pretty well what we wanted to do in the sequence of materials from three months to twelve months, but we were a lot vaguer about materials to use from twelve months to twenty-four months. We did a lot of scratching around, trial and error, take it out and use, throw it away and re-do all during the year. Second, you have something going for you in the first year that you do not in the second. The child is growing very rapidly in the first year of life, and I am perfectly willing to take advantage of magic. If the mothers assumed that the growth was because of what we were doing that served as a positive reinforcement for the mothers. Growth slows down in the second year of life, and also the children become a good deal more mobile. They do not want to sit still and pay attention in the same fashion. I think there is a maturational influence in the second year.

Of critical importance is the fact that we are able to demonstrate, four years later, the effects of a minimal intervention program in the

first year of life. It will be important, however, to see if that holds up at age six and to see what happens as the children move on into school.

Another basic assumption concerns length of time. Is the longer the better? The conclusions presented on Table 15 of the analysis of Stanford-Binet and PSI scores shows that there is not the nice, neat pattern of the longer the better. What emerges is the combination of earliness, length and consistency of treatment.

A major set of concerns had to do with sex differences. We have examined our data in a variety of ways: within treatment groups, across treatment groups, and regardless of treatment groups. Table 16 is a summary. The Stanford-Binet scores show no significant difference at age five by group, but there are some differences on the Pre-School Inventory for those who are in for two consecutive years. Otherwise, the picture does not seem completely clear.

The TOB is a measure of task oriented behavior which Earl Schaefer derived from the Bayley observation form used during Bayley testing. We have been using it with our testing at each year. We find no sex differences. We find no differences on our rating, based on observation in the Home Learning Center, of effectiveness motivation (Kronstadt, 1973). Lally (1968), found that there was a sex by treatment effect at age one, in that the significant differences between experimentals and controls on the Griffiths seemed to be due to the girls. In Resnick's (1972) study at age two in the child language and free play situation there were no significant differences by sex in expressive language,

Table 15

CHILD FACTOR (3)

POSTULATES AND ASSUMPTIONS:

LENGTH OF TIME IN PROGRAM EFFECTS LONG TERM HOLDING POWER.

ENTERING PUPIL CHARACTERISTICS (CHILD):

AGE.

PROGRAM GOAL:

TO DETERMINE IMPORTANCE OF LENGTH OF TIME.

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

PATTERN OF 1, 2, OR 3 YEARS OF INVOLVEMENT.

RESULTS:

ON STANFORD-BINET AT 5

(a) THREE YEARS, FIRST TWO YEARS, FIRST YEAR, THIRD YEAR > CONTROL.
(b) THREE YEARS, 2 CONSECUTIVE YEARS, FIRST YEAR, THIRD YEAR > SECOND YEAR ONLY.
(c) NSD AMONG 2 YEAR GROUPS, BUT FIRST AND THIRD YEAR NSD FROM CONTROL OR SECOND YEAR ONLY.

ON PSI AT 5

(a) THREE YEARS, 2 CONSECUTIVE YEARS, FIRST YEAR > CONTROL.
(b) THREE YEARS, 2 CONSECUTIVE YEARS > SECOND YEAR ONLY.
(c) THREE YEARS, SECOND 2 YEARS > 2 SEPARATE YEARS, THIRD YEAR ONLY.

COMMENTS:

CONSISTENCY SEEMS TO BE A FACTOR. TWO CONSECUTIVE YEARS IS BETTER THAN AN IN-OUT-IN PATTERN.

Table 16

CHILD FACTOR (4)

POSTULATES AND ASSUMPTIONS:

GIRLS WILL ACHIEVE BETTER THAN BOYS, HAVE MORE ADEQUATE SELF-CONCEPTS

ENTERING PUPIL CHARACTERISTICS (CHILD): SEX

RESULTS:

(a) NO SIGNIFICANT DIFFERENCE AT 5, BY GROUP ON S-B

(b) ON PSI, AT 5, BOYS EXPERIMENTAL BOYS CONTROL ONLY FOR 3 YEAR GROUP: GIRLS EXPERIMENTAL GIRLS CONTROL FOR 3 YEAR AND BOTH TWO CONSECUTIVE YEAR GROUPS. GIRLS TWO CONSECUTIVE YEARS BOYS TWO CONSECUTIVE YEARS.

(c) NO SIGNIFICANT DIFFERENCE AT 3, 4, 5 ON TOB

(d) NO SIGNIFICANT DIFFERENCE AT AGE 3 ON STOTT EFFECTIVENESS MOTIVATION SCALE

(3) AT AGE 1, INTERACTION EFFECT BETWEEN SEX AND TREATMENT: EXPERIMENTAL GIRLS HIGHER THAN CONTROLS ON GRIFFITHS EXPERIMENTAL, BOYS NOT SIGNIFICANT DIFFERENCE FROM CONTROLS EXCEPT LOWER ON LOCOMOTOR FACTOR (LALLY).

(f) AT AGE TWO, CHILD LANGUAGE IN FREE PLAY SITUATION, NO SIGNIFICANT DIFFERENCE BY SEX (31 BOYS, 36 GIRLS) (RESNICK)

(g) AT AGE THREE, GIRLS HIGHER THAN BOYS ON 24 OUT OF 27 LANGUAGE MEASURES, SIGNIFICANT ON 10: ESPECIALLY NUMBER OF WORDS, NUMBER OF DIFFERENT WORDS, MEAN LENGTH OF REMARK (GIRLS = 48, BOYS = 54) (RESNICK)

COMMENTS:

ALTHOUGH THERE ARE FEW DIFFERENCES ON THE VARIOUS MEASURES, EITHER THOSE BASED ON OBSERVATION IN HOME LEARNING CENTER OR IN TESTING SITUATION, THE PATTERN OF INTER-RELATIONSHIPS SEEMS TO BE A FUNCTION OF SEX. THIS SEEMS TO BE TRUE OF RELATIONSHIPS BETWEEN MATERNAL VARIABLES AND CHILD PERFORMANCE (SEE MOTHER NO. 8) AND RELATIONSHIPS AMONG CHILD MEASURES (SEE NO. 6). WHERE THERE ARE DIFFERENCES, SEEMS TO BE EITHER GIRL HIGHER (LANGUAGE AT 3) OR INTERACTION OF TREATMENT BY SEX, GIRLS EXPERIMENTAL $>$ GIRLS CONTROL MORE THAN BOYS EXPERIMENTAL $>$ BOYS CONTROL.

but at age three, of the 27 different ways in which he scored his tapes, 24 favored the expressive language of the girls, and 10 were significant, including the number of words used, the number of different words used, and the mean length of remark.

As the comments on Table 16 state, we believe that the differences are not so much quantitative, although where they are they favor the girls, but qualitative, in the nature of the inter-relationships among variables. In my view, this organizing concept, how the variables are put together, is both more intriguing and useful than score-by-score comparisons. We have much further work to do in this area, but the beginnings are here both in the data we have at hand and the multivariate techniques available to us.

The last child factor is affect (Table 17). Although we have used such terms as intellectual stimulation, and intellectual performance measurements such as the Griffiths, Bayley, Binet, we were concerned with affective development of the child. There are, as you well know, a number of severe proolems in this area. There is just no satisfactory way to measure self-concept in the three month old, one year old, two year old, and even the three year old. What we had to do was use some other measures and theoretically link them as reflecting aspects of self-concept. We used the SEMS, and an event-sampling procedure still not fully analyzed (Weld) and the Task Oriented Behavior scores. At age three the SEMS scores are related to Stanford-Binet, although the trend is for this to be be more true for girls. Boys' SEMS scores are significantly related to TOB, girls are not. SEMS scores are related to Resnick's major child language

Table 17

CHILD FACTOR (5)

POSTULATES AND ASSUMPTIONS:

THE MANNER OF INSTRUCTION AND THE EMOTIONAL CLIMATE AS WELL AS THE EXPERIENCE OF ACTUAL COMPETENCE INFLUENCES DEVELOPMENT OF SELF-CONCEPT. HOME INTEREST IN CHILD LEARNING PROMOTES POSITIVE IDENTIFICATION WITH PARENTS AND INCREASED SENSE OF COMPETENCE.

GOAL:

MORE POSITIVE SELF-REGARD.

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

INDIVIDUALIZED, PRIVATE INSTRUCTION PACED TO CHILD.

RESULTS:

(a) AT AGE 3: SEMS POSITIVELY RELATED TO STANFORD-BINET FOR GIRLS. TOB FOR BOYS. RELATED TO EXPRESSIVE LANGUAGE FOR BOTH (KRONSTADT).

(b) AT AGE 5: TOB CORRELATES TO S-B; .70.

COMMENTS:

NO WAY WAS FOUND TO MEASURE SELF-CONCEPT IN 3'S AND 4'S. TOB AND SEMS WERE USED AS MOTIVATIONAL MEASURES, WHICH WE ASSUMED REFLECT ASPECTS OF SELF-CONCEPT. COULD ONLY EXAMINE RELATIONSHIPS, NOT EXPERIMENTAL VS CONTROL. HOPE TO DO THIS AT AGE 7 AND UP IN LONGITUDINAL FOLLOW UP.

variables: vocalizations, number of words used, number of different words used, mean length of remark, number of nouns used and number of verbs used. (Kronstadt, 1973) Earl Schaefer takes the position that expressive language is not only an intellectual variable. He finds a number of relationships between it and other ways in which he measures affect. It is interesting that the effectiveness motivation as measured by observing behavior of youngsters in the backyard center was significantly related to the expressive language output of children in that five minute free play situation that Resnick set up.

At age three, four, and five, TOB has been highly related to intellectual test score. If it is a measure of self-concept, then we can see the relationship here between this aspect of affect and cognition. Further Resnick (1972) found that his expressive language measures at age two were highly predictive of Stanford-Binet scores at age three. We have a commitment to the viability of the concept, "self-concept", but we are still struggling with the measurement problem.

Maternal and Family Factors

Let's shift now to the maternal variables. We got into the parent education business because in 1966 people were making an assumption that now has been called the deficit model. That is, one of the reasons that children do not do well in school is because something is wrong in the home. So our first assumption (Table 18) was that the lower class mother, defined by income, does not necessarily see herself as a teacher of her child. She lacks effective motivational and instructional techniques. Long range gains depend on changing the home so that the

Table 18

MATERNAL AND FAMILY FACTORS (1)

POSTULATES AND ASSUMPTIONS:

THE LOWER-CLASS MOTHER DOES NOT NECESSARILY SEE HERSELF AS A TEACHER OF HER CHILD, LACKS EFFECTIVE MOTIVATIONAL AND INSTRUCTIONAL TECHNIQUES. A PROGRAM MUST TEACH HER THESE. LONG-RANGE GAINS DEPEND UPON CHANGE IN HOME TEACHING BEHAVIOR.

ASSUMED ENTERING PUPIL CHARACTERISTICS: MOTHER

LACK OF SKILL IN TEACHING CHILD.

DEMOGRAPHIC FACTORS:

LOW INCOME.

GOAL:

INCREASE ABILITY TO TEACH CHILD SPECIFIC TASKS.

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

TEACHER BEHAVIOR: DEMONSTRATION OF BEHAVIOR;
ORGANIZATION: ONCE A WEEK HOME VISIT

RESULTS:

WITHIN POPULATION, VARIABILITY IN MATERNAL TEACHING SKILL. POSITIVE RELATION BETWEEN MATERNAL TEACHING SKILL ("PING-PONG" PATTERN) AND CHILD PERFORMANCE ON BAYLEY MDI AT AGE ONE (ISIS).

COMMENTS:

THIS, AS WELL AS OTHER RESULTS, DEMONSTRATES THE HETEROGENEOUS CHARACTER OF LOW-INCOME MOTHERS IN THEIR BEHAVIOR AND ATTITUDES. REJECT SOCIOLOGICAL MYTHOLOGY!

mother sees herself as a teacher of her child and possesses skill in teaching her child. We assume that the mother entered the program, and let me stress the word assume, with a lack of skill in teaching the child, and a lack of orientation toward self as teacher. In our early programs we had no way of assessing, "the skill of the mother". This was an assumption and we proceeded on our way using this assumption. Now, in 1972, I would explore this in quite a different fashion, but our goal then was to increase the ability of the parent to teach her child specific activities. The instructional situation characteristic was therefore to send somebody into the home to demonstrate to her something specific to do, to show her how, to encourage her then to do it, and to follow it up week by week, introducing a continouus set of materials, and talking with the mother about how well the child is going, and involving her in the operation.

The only way we have had to assess maternal teaching skill has come out of the ISIS project (Gordon and Jester, 1972) by use of the video-tapes. We utilized a variation of the reciprocal categories scale, based on interaction process analysis. It is based on the observation of parent educator, mother, and infant. A behavior is assigned to a category every three seconds and these behaviors are then paired. We analyzed by examining the pattern of interaction between nine and twelve months of age as predictive of the Bayley mental development index scores at age one. We found that there were very clearly some teaching patterns that related positively, and others negatively, to child performance at age one. The positive pattern was

the ping-pong pattern (I'm sure I didn't invent the term, but I don't know its origin). The pattern is back and forth, I do something, you do something, I do something, you do something. It is a very rapid transactional pattern. Those of you with various theoretical dispositions have ways of explaining this readily. On the other hand, sustained adult behavior,talking away at the child, without allowing him to respond or necessarily paying any attention to his responses (typical professorial behavior) has a negative correlation to Bayley scores. What is fascinating about these two findings is how closely they tie in with Soar's work in Follow Through (Soar, 1972) and with so much of the classroom systematic observation research. Mothers within this population vary considerably in how much of this pattern they use. Therefore, it is quite possible now that we have, if we wanted to start over again, a way of measuring entering behavior of parents that we did not have back in 1966. But, further the results indicate that one of the basic assumptions on which many projects rested, that of a homogeneous deficient population, is just not so. Some of the mothers were extremely skillful in ping-pong at the end of the of the project, and had probably been extremely skillful before we were ever involved with them. But other mothers were unskillful at twelve months, especially those in the control group and paraprofessional child-taught girl group (see appendix for RCS items). In other work that Dr. Jester and Dr. Guinagh (1972) have done, using a parent as reader scale, they've again found a great range on the ability of parents to read stories to their young children. The assumption that mothers

lack skill is true for only a portion of the population, but for that portion we were, I think, effective in modifying their behavior.

The second basic assumption (Table 19) is that children learn from their surroundings. This is not a great revolutionary idea, that a home lacking in intellectual materials might be teaching that intellectual activities are not important and might also fail to teach intellectual behavior. We had a tremendous range in the presence of these materials. There were indeed a considerable number of homes in which these materials were lacking. In the infant project we supplied them through building some of our task materials around them and introducing them in a meaningful fashion into the home. We provided Ebony and Life magazines, and other printed materials. We provided toy making experiences in taking simple objects and materials around the house and making mobiles, dolls, and games. When the mothers were interviewed at child age three, (conducted by a team that consisted of an anthropologist and a psychiatric nurse, neither of whom were heavily involved in the project) mothers in the experimental group reported they were significantly more involved in child play with their children, in bringing materials into the home, in buying more educational toys, and so forth, than were the control group mothers. On the other hand, the tester who asked the mothers some questions while she was doing the testing, found that about 40% of the control mothers indicated that they had learned of the value of some of these things simply by watching the child's behavior in the testing situation. She didn't know who were control, we analyzed the responses. The question has been

Table 19

MATERNAL AND FAMILY FACTORS (2)

POSTULATES AND ASSUMPTIONS:

CHILDREN LEARN FROM THEIR SURROUNDINGS. A HOME LACKING IN INTELLECTUAL MATERIALS TEACHES THAT THESE ARE NOT IMPORTANT. ALSO FAILS TO TEACH INTELLECTUAL BEHAVIOR.

ASSUMED ENTERING PUPIL CHARACTERISTICS: MOTHER

LACK OF USE OF MATERIALS (BOOKS, MAGAZINES, TOYS).

DEMOGRAPHIC FACTORS:

LACK OF TEACHING MATERIALS, (BOOKS, MAGAZINES, TOYS).

GOAL:

INCREASE PRESENCE, USE OF, MATERIALS.

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

CONTENT: PROVIDE BOOKS, MAGAZINES;
TEACHER BEHAVIOR: DEMONSTRATE WAYS TO MAKE TOYS OUT OF SIMPLE FREE OR INEXPENSIVE MATERIAL.

RESULTS:

EXPERIMENTAL MOTHERS REPORT SIGNIFICANTLY MORE INVOLVED WITH CHILD-PLAY, BUY MORE EDUCATIONAL TOYS, THAN CONTROLS, THREE AND FOUR YEAR INTERVIEW (HLC).

COMMENTS:

40% OF CONTROL MOTHERS INDICATED THEY HAD LEARNED SOME ACTIVITY IDEAS BY WATCHING TESTING (HLC).

raised about the effects of testing as an intervention. If you recall our child effects, testing is insufficient, because both the experimental and the control groups had continued testing. Program effects overshadow testing effects.

The third postulate, and a very basic one, had to do with language. (Table 20) This is an equivocal postulate. There is much discussion in the current literature on the deficit versus difference approach to language. Nevertheless, our 1966 assumption was that the child structure of language, his linguistic development, is determined by the linguistic pattern in the home. Based on Basil Bernstein's then ideas, a simple pattern would make it more difficult for the child to develop and learn abstract concepts. This is the area in which there is the most controversy at the present time. We now feel that all languages have common characteristics, at least the linguists think so, and that any language possesses the capabilities of abstraction. But I would take the position that how a language is used in the home makes a tremendous difference in the development of the child. We assumed that the frequency of adult interaction with the child would not be as much as in favored homes, and that the kind of language used toward the child might be more of the ordering, forbidding, and commanding type, than the reasoning, questioning type of language. Therefore, we tried to build into the materials use of verbs and adjectives and total sentences and questions.

Resnick found that on several of his variables, and here I only extracted the two major ones: 1) the number of different words that mothers used, 2) the mothers' interogatory sentences at age two in the

Table 20

MATERNAL AND FAMILY FACTORS (3)

POSTULATES AND ASSUMPTIONS:

THE CHILD'S STRUCTURE OF LANGUAGE IS ORIGINALLY SET BY THE LINGUISTIC PATTERN OF THE HOME. A SIMPLE PATTERN MAKES THE DEVELOPMENT OF ABSTRACT CONCEPTS MORE DIFFICULT. LANGUAGE IS LEARNED EARLY AND INFLUENCES DEVELOPMENT OF THOUGHT.

ASSUMED ENTERING PUPIL CHARACTERISTICS: MOTHER

LOW VERBAL FACILITY IN LANGUAGE TOWARD CHILD

GOAL:

HIGHER LEVEL OF LINGUISTIC BEHAVIOR TOWARD CHILD

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

CONTENT: PROVISION OF VERBS, ADJECTIVES, TOTAL SENTENCES IN TASKS (HOME LEARNING ACTIVITIES)

RESULTS:

SIGNIFICANT RELATIONSHIP BETWEEN MATERNAL LANGUAGE BEHAVIOR (MDW, MIS AT AGE TWO) AND STANFORD-BINET AT AGE THREE (RESNICK), AGE FIVE (HLC).

COMMENTS:

AS IN (1), WIDE VARIABILITY WITHIN GROUP. SINCE 1966, CHANGE IN GENERAL VIEW FROM DEFICIT MODEL TO DIFFERENCES MODEL. RENICK DATA INDICATE CLEAR RELATIONSHIP BETWEEN MATERNAL LANGUAGE BEHAVIOR AND CHILD PERFORMANCE WITHIN POPULATION SAMPLE.

five minute free play time was significantly related to the Stanford-Binet at age three. We have examined the relationship between those two maternal variables at age two to the Stanford-Binet at five, the correlations are about .50. Considering the three year gap, and that it was a very small five minute sample of language, the finding supports the notion of the strong relationship between home use of language and child intellectual performance. Again, we find wide variability in the group. Whether one holds a deficit or difference view, Resnick's data and our follow-up indicate a clear relationship between maternal language behavior and child performance within this population.

We have another language hypothesis or assumption, (Table 21) that the important time is the receptive language period, 0 to 2. The pattern of interaction of language at that time, before the child is doing much talking himself, is a critical time. We assumed that there was a low frequency of conversation directed at the child. This does not mean that the mother lacks language, but it means she doesn't direct it in an interaction pattern at the child. The child may be surrounded with a lot of people talking, but they are not talking to him. In a number of the homes the children are getting language input from the television and the radio, but it is really noise in the background. It is not being directed at him, nor does it require any kind of response from him. We were concerned about increasing the frequency of verbal interaction. In the home visit we stressed the importance of language and we provided in the activities a variety of words in relation to each activity.

Our data come primarily from the Parent Educator Weekly Report which

Table 21

MATERNAL AND FAMILY FACTORS (4)

POSTULATES AND ASSUMPTIONS:

FOR EFFECTIVE LANGUAGE DEVELOPMENT THE YOUNG CHILD NEEDS INPUT WHEN HE IS AT THE RECEPTIVE LANGUAGE LEVEL (0 - 2) AS WELL AS CONTINUOUS INTERCHANGE IN THE GROWING YEARS.

ASSUMED ENTERING PUPIL CHARACTERISTICS: MOTHER

LOW FREQUENCY OF TALK TO CHILD.

GOAL: INCREASE FREQUENCY OF VERBAL INTERACTION WITH CHILD

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

TEACHER BEHAVIOR: STRESS IMPORTANCE OF LANGUAGE;
CONTENT: PROVIDE WORDS AND ACTIVITIES

RESULTS:

(a) LOW, BUT SIGNIFICANT RELATIONSHIP BETWEEN OBSERVED ADULT VERBAL BEHAVIOR ON PEWR AND CHILD PERFORMANCE AT AGES ONE, TWO (BRADSHAW, JESTER AND BAILEY, ECSPE, HERMAN AND ETHERIDGE).

(b) ANALYSIS OF ISIS VIDEO TAPES REVEALS INCREASE IN MOTHER-BABY INTERACTION AND INSTRUCTIONAL INTERACTION OVER TIME (3 - 12 MONTHS).

COMMENTS:

VERBAL MEASURE A WEAK ONE; PRESENCE OF BEHAVIOR DURING HOME VISIT, NO FREQUENCY COUNT WITHIN VISIT, YET CONSISTENT RESULTS. ANALYSIS OF VIDEO-TAPES IN NEW JESTER PROJECT (THE EFFECT OF REINFORCEMENT ON INFANT PERFORMANCE) WILL YIELD MORE CLUES.

were completed by the parent educators after each home visit. Included was a very short checklist about the presence of certain verbal activities, such as: did the mother use words with the child? Did she speak directly into the child's face? It is a very primitive list of about 13 such items. There were no frequency counts, it simply occurred or didn't occur, no allowance for the length of the time they were in the home. Nevertheless, Jester and Bailey (1969), who studied the first experimental group, Bradshaw (1968), who examined the visited control group, Herman (1971) and Etheridge (1971), who analyzed language as part of larger investigations of maternal effects on two year olds' performance, all found significant low but reliable correlations (in the 30's) between the language behavior as gathered on that primitive scale, and child's performance on the Griffith's at age one, and the Bayley at age two.

The reciprocal categories tapes were examined to see if we increased the amount of interaction between mother and infant, and the amount of instructional interaction, there is a rising line from 3 months to 12 months from approximately six per cent of the total behavior to twelve per cent on instructional interaction, from about twelve to twenty per cent on interaction. This is an indication that we achieved the goal of increasing the frequency of verbal interaction. More than that, there is the demonstration of the relationship between adult language and child performance. (Gordon and Jester, 1972, see appendix for figures)

We were concerned with maternal affect. (Table 22) The literature

Table 22

MATERNAL AND FAMILY FACTORS (5)

POSTULATES AND ASSUMPTIONS:

PARENTS INCREASE THEIR SENSE OF COMPETENCY AND SELF-ESTEEM BY SEEING THAT THEIR TEACHING HELPS THE CHILD

ASSUMED ENTERING PUPIL CHARACTERISTICS: MOTHER

LOW SELF-ESTEEM

DEMOGRAPHIC FACTORS: LOW INCOME

GOAL:

RAISE SELF-ESTEEM

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

INDIVIDUAL INSTRUCTION OF MOTHER IN HOME

RESULTS:

WHEN ANALYZED FOR SAMPLE OF 30 EXPERIMENTAL, 26 CONTROL, NO SIGNIFICANT DIFFERENCE FROM CHILD'S AGE 3 - 12 MONTHS ON HISM (ECSPE)

COMMENTS:

INSTRUMENT HAS BEEN RE-FACTORED ON FOLLOW THROUGH POPULATION, BUT NO RE-ANALYSIS OF ECSPE DATA HAS BEEN DONE. FOLLOW THROUGH DATA SHOW CHANGES (NO ADEQUATE CONTROLS)

in the early 1960's suggested that disadvanteged mothers saw themselves as inadequate, that they had lower self-esteem than middle class parents, that they had less feeling of control over the environment and more a feeling of being victims of chance, fate and circumstance. We thought that a program such as this might change that picture. Our assumption was that when the mother saw that what she was doing with the child was paying off, this would provide a way in which she would change her picture of herself toward adequacy. We also assumed that she was entering with low self-esteem and our goal was to raise it. Because of the time it took to develop the scales we were not able to use them on the original 1966 population, and we only used them on the second cohort who were involved in the curriculum comparison study. We found that the How I See Myself scale did not show any significant change from the mother's score when the child was three months of age to the mother's score when the child was twelve months of age. Since then we have refactored that instrument on the Follow Through population but we have not reanalyzed these data. As you can imagine, we still have much unworked data yet to be analyzed. The Follow Through data suggest that this program does lead to the improvement of self-esteem as measured by the How I See Myself scale.

Bilker (1970) modified the language of the Rotter I-E Scale with the help of the parent educators and we called it the Social Reaction Inventory. (Table 23) We felt that the mothers entering the program would have a high belief in external control of reinforcement, that is, they would see themselves as victims of chance and fate and circumstance.

Table 23

MATERNAL AND FAMILY FACTORS (6)

POSTULATES AND ASSUMPTIONS:

PARENTS INCREASE THEIR SENSE OF CONTROL OF ENVIRONMENT BY SEEING THAT THEIR BEHAVIOR MAKES A DIFFERENCE IN THE CHILD

ASSUMED ENTERING PUPIL CHARACTERISTICS: MOTHER

HIGH ON BELIEF IN EXTERNAL CONTROL OF REINFORCEMENT

DEMOGRAPHIC FACTORS: LOW INCOME

GOAL:

MOVE TOWARD MORE BELIEF IN INTERNAL CONTROL OF REINFORCEMENT

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

INDIVIDUAL INSTRUCTION OF MOTHER IN HOME

RESULTS:

WHEN ANALYZED FOR SAMPLE OF 30 EXPERIMENTAL, 26 CONTROL, SIGNIFICANT DIFFERENCE IN MOVEMENT TOWARD INTERNAL CONTROL BY EXPERIMENTAL GROUP, 3 - 12 MONTHS (BILKER). ECSPE MOTHERS MORE EXTERNAL THAN FOLLOW THROUGH PARENT EDUCATORS (ECSPE) AND NATIONAL HIGH SCHOOL SAMPLE ON ORIGINAL I - E SCALE. (BILKER)

COMMENTS:

THE FOLLOW THROUGH DATA YIELD SIMILAR FINDINGS. ANOTHER WAY TO LOOK AT THE ISSUE IS IN PARENT BEHAVIOR - HOUSING, NUMBER OF BIRTHS, SEEKING MORE EDUCATIONAL EXPERIENCES FOR CHILDREN- ALL SHOW MORE INTERNAL BEHAVIOR BY EXPERIMENTAL PARENTS (HLC)

Our hypothesis was that their direct involvement in the production of effects on the child would serve to change their image and enable them to feel that they had more control. For that same group studied on the How I See Myself scale, mothers moved to a more internal view. When we compared our mothers with other samples, they were more external than at least a comparative national high school sample using the standard I-E scale, and were more external than parent educators employed in the Florida parent education projects in the eleven communities in which we work. Parents in the Florida Follow Through program move toward a more internal view.

Both of these schedules are self-reports; they are weak measures of what we are after. One can question their validity. We could say that if the parents have moved toward more sense of control and more self-esteem this should show up in what they do. We have studied the housing patterns, birth rates, and the involvement of children in other programs after leaving this program. Both by moving to better housing as it opened in the Gainesville area, and in less moving around from pillow to post, the experimentals have made more positive moves. The average experimental mother had about three children when she started and the average control mother had a little more than three. The experimental mothers have given birth to fewer children since they've been involved even since they have left the project. (Gordon, 1971-72) The program supplied no information. When parents were interviewed, far more of the experimental mothers reported that they had sought places to put their children into other kinds of child development programs

than did the control. These are side effects, but I think worthwhile side effects. I believe they relate to control over the environment.

We were not only interested in the sex differences in child performance, but also in the ways that mothers might relate differently to boy and girl babies. (Table 24) We have many findings in this particular dimension. We assumed that there would be different socialization patterns and different verbal behavior and different attitudes toward boys and toward girls. Two dissertations, Herman (1971) and Etheridge (1971) examined the relationship between maternal variables and the scores of the children on the Bayley scales at age two. Maternal self-attitudes, maternal verbal behavior, and maternal attitudes toward the project seemed to be more influential in determining within the experimental boys, those that scored high and those that scored low. There is an effect for the girls, but the predominant effect is on the boys. We have the interesting situation that treatment effects seem to be more related to the girls, maternal personality and behavior within the experimental group seems to be more influential on boys. I've arrived at an oversimplified equation--and that it is, if you are going to mount a project, for the girls get them involved in treatment, for the boys work on the mothers attitude! But this is a gross oversimplification and I really wouldn't want to follow it out in action.

The ISIS project was designed to shed further light on the above problem. In the ISIS project we compared professional versus paraprofessional with boy and girl babies in both mother and child-taught situations. We found fascinating sex-by-treatment

Table 24

MATERNAL AND FAMILY FACTORS (7)

POSTULATES AND ASSUMPTIONS:

MOTHER'S DIFFERENTIAL EXPECTATIONS FOR BOYS AND GIRLS WILL INFLUENCE HER BEHAVIOR AND CHILD PERFORMANCE.

ASSUMED ENTERING PUPIL CHARACTERISTICS: MOTHER

ASSUMED DIFFERENT SOCIALIZATION PATTERNS, VERBAL BEHAVIOR, ATTITUDES.

RESULTS:

ON BAYLEY SCALES AT AGE 2:

(a) MATERNAL ATTITUDE INDEX AND AMOUNT OF POSITIVE VERBAL BEHAVIOR ON PEWR DIFFERENTIATED MOTHERS OF HIGH FROM LOW SCORING BOYS AND GIRLS ON MDI AND PDI (HERMAN).

(b) SRI AND HISM FACTOR SCALES DIFFERENTIATED MOTHERS OF HIGH AND LOW BOYS (HERMAN).

(c) EXTENT OF TALK ON PEWR DIFFERENTIATED HIGH AND LOW BOYS AND GIRLS ON MDI AND PDI (ETHERIDGE).

(d) HISM FACTORS SCORE DIFFERENTIATED HIGH AND LOW BOYS ON MDI (ETHERIDGE).

(e) HISM FACTOR SCORES DIFFERENTIATED HIGH AND LOW BOYS ON TOB.

ON MEASURES OF MOTHER'S LANGUAGE TO CHILD AT TWO IN FREE PLAY SITUATION: NO SIGNIFICANT DIFFERENCE BY SEX (RESNICK).

FROM ISIS PROJECT:

MATERNAL TEACHING BEHAVIOR, BEHAVIOR OF PARENT EDUCATOR, CHILD PERFORMANCE RELATED TO SEX OF CHILD AND PE STATUS.

(a) ON BMDI BOYS AND GIRLS OF PARAPROFESSIONALS WERE EQUAL; GIRLS WERE 13 POINTS (SIGNIFICANT) HIGHER THAN BOYS FOR PROFESSIONALS.

(b) MOTHERS OF GIRLS TAUGHT BY PROFESSIONALS SHOWED MORE TEACHING SKILL THAN CONTROL MOTHERS OF GIRLS.

(c) NO SIGNIFICANT DIFFERENCE FOR EXPECTATION OF AMOUNT OF SCHOOLING.

COMMENTS:

THE ANALYSES ARE COMPLEX, AND THE MEASURES A MIXTURE OF SELF-REPORT SCALES AND PARENT EDUCATOR OBSERVATIONS. THERE IS OVERLAP IN THE TWO SAMPLES. NEVERTHELESS, THE RESULTS ARE CONSISTENT IN SPITE OF APPLICATION OF DIFFERENT STATISTICAL TREATMENTS (MULTIPLE REGRESSION, DISCRIMINANT FUNCTION, PEARSON r). FURTHER, THE FINDINGS ON VERBAL BEHAVIOR RELATE TO OTHER FINDINGS FROM BOTH PEWR DATA TO GRIFFITHS (SEE 4), AND SAMPLE

MATERNAL AND FAMILY FACTORS (7)

(continued)

COMMENTS:

OF MATERNAL TALK ON STANFORD-BINET (SEE 3). IN GENERAL, MATERNAL PERSONALITY VARIABLES APPEAR TO HAVE MORE INFLUENCE ON BOYS THAN GIRLS.

OVERALL, PROFESSIONAL PARENT EDUCATORS SEEMED TO BE MORE TUNED IN TO GIRLS, PARAPROFESSIONALS TO BOYS: PROFESSIONALS TO MOTHERS; PARAPROFESSIONALS TO BABIES. PROFESSIONALS WORKED POORLY WHEN DEALING DIRECTLY WITH BOYS, BEST WITH MOTHERS OF GIRLS; PARAPROFESSIONALS WERE MORE EVEN-HANDED WITH BOTH SEXES. THE TWO STUDIES (JESTER, GORDON) SHOULD SHED MORE LIGHT ON INTERACTION PATTERNS BETWEEN MOTHER AND INFANT BOTH IN RESPECT TO LANGUAGE REINFORCEMENT (JESTER) AND SOCIAL INTERACTION (GORDON). THESE STUDIES UTILIZE THE ISIS TAPES.

differences. For example, girl babies taught, whether directly or through the mother, by professionals averaged twelve points higher on the Bayley than did the boys they taught. No such differences appear for the paraprofessicnals, and the overall test score averages are equal for the two parent educator groups. (see appendix) The same pattern held on our other measures. Examination of the interaction data indicate that professionals seemed to attend more to the mothers, particularly the mothers of girls; paraprofessionals seemed to attend more to the baby. Recall that the poor (negatively related to BMDI at age one) teaching pattern was sustained adult talk (see Table 18, appendix) This pattern was engaged in with higher frequency from three to twelve months by the professionals, especially with the boys. Sustained baby activity was a pattern related to BMDI. Again, professionals seemed to encourage less of this in the child taught situation than did the paraprofessionals, and again the professsonals' boys show up at the bottom. (see appendix)

Why this picture emerged, whether it is replicable, we do not know. There is still a great deal to be learned, and ISIS raised more questions than it provided answers about early socialization as a function of sex. We hope that both the Jester project and the social competency project, since we'll be analyzing these data by sex, may give us some other clues.

Tables 25-28 contain information about other demographic variables. We found a low correlation between amount of mother's education and Stanford-Binet scores at age five, some indications that these homes were crowded, but no clear picture of effects, no solid support for the general assumption that marital status effects child test performance.

Table 25

MATERNAL AND FAMILY FACTORS (8)

POSTULATES AND ASSUMPTIONS:

THE MORE LIMITED THE PARENT'S BACKGROUND THE MORE DIFFICULT IT IS FOR HER TO PROVIDE INTELLECTUAL STIMULATION FOR THE CHILD.

ASSUMED ENTERING PUPIL CHARACTERISTICS:

LIMITED FORMAL EDUCATION.

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

ORGANIZATION: INDIVIDUAL TUTORING;
CONTENT: CONCRETE, SPECIFIC TASKS

RESULTS:

NO SIGNIFICANT RELATIONSHIP BETWEEN NUMBER OF YEARS SCHOOLING AND CHILD PERFORMANCE AT AGE ONE (ECSPE).

MEAN NUMBER OF YEARS OF EDUCATION = TEN.

LOW BUT RELIABLE RELATIONSHIP BETWEEN NUMBER OF YEARS OF SCHOOLING OF MOTHER WHEN CHILD WAS 3 AND 5 YEARS ON STANFORD-BINET.

COMMENTS:

DOES PARENT AMOUNT OF SCHOOLING BECOME MORE CRITICAL AS THE CHILD GETS OLDER?

Table 26

MATERNAL AND FAMILY FACTORS (9)

POSTULATES AND ASSUMPTIONS:

RAPPORT CAN BE ESTABLISHED BETTER THROUGH THE USE OF A PARAPROFESSIONAL FROM SAME BACKGROUND THAN BY USE OF PROFESSIONALS.

ASSUMED ENTERING PUPIL CHARACTERISTICS:

LACK OF TRUST IN AGENCIES, PROFESSIONALS.

INSTRUCTIONAL SITUATION CHARACTERISTICS OF THE PROGRAM:

PARENT EDUCATOR MEMBER OF SAME SOCIO-ECONOMIC GROUP.

RESULTS:

NO SIGNIFICANT DIFFERENCE IN RAPPORT (e.g., ATTRITION RATES) BETWEEN PROFESSIONALS AND PARAPROFESSIONALS IN ISIS PROJECT.
PROFESSIONALS WORKED WELL (AS MEASURED BY RCS) WITH MOTHERS, ESPECIALLY MOTHERS OF GIRL BABIES.
NO SIGNIFICANT DIFFERENCES EXPERIMENTAL - CONTROL ON HISM (ECSPE).

COMMENTS:

IN ISIS, CROSS-RACE, CROSS-CLASS RANDOM ASSIGNMENTS MADE TO TEST PROFESSIONAL-PARAPROFESSIONAL HYPOTHESIS. FOLLOW THROUGH DATA REVEAL ACCEPTANCE OF LOW-INCOME PARAPROFESSIONALS BY MIDDLE-INCOME PARENTS AT SAME RATE AS BY LOW-INCOME PARENTS (ALSO CROSS-RACE).

Table 27

MATERNAL AND FAMILY FACTORS (10)

POSTULATES AND ASSUMPTIONS:

DENSITY AFFECTS GROWTH AND PERFORMANCE NEGATIVELY.
QUALITY OF HOUSING WILL BE RELATED POSITIVELY TO MATERNAL SELF-REGARD.

DEMOGRAPHIC FACTORS:

HOME CONDITIONS: DENSITY, QUALITY.

RESULTS:

LOW NEGATIVE RELATIONSHIP BETWEEN CROWDING AND GRIFFITHS SCALES FOR CONTROL (BRADSHAW). AVERAGE SIZE OF HOUSEHOLD: 5:8, AVERAGE NUMBER OF ROOMS 5, DENSITY PER ROOM 1.2. NUMBER OF CHILDREN UNRELATED TO GRIFFITHS GIQ N = 106 (ANALYZED BY TREATMENT GROUP) (ECSPE).

COMMENTS:

ALTHOUGH NO GOAL SET, INTERVIEW DATA INDICATE GREATER MOVEMENT TO BETTER HOUSING AND SMALLER NUMBER OF MOVES FOR EXPERIMENTAL OVER CONTROL (HLC). NUMBER OF CHILDREN RANGED FROM ONE TO FOURTEEN, MEAN ABOUT THREE.
DENSITY IS HIGHER WITHIN HOUSE THAN HARLEM, BUT RURAL AND SEMI-RURAL MEANS DISPERSION OUTSIDE.

Table 28

MATERNAL AND FAMILY FACTORS (11)

POSTULATES AND ASSUMPTIONS:

PRESENCE OF THE FATHER PROBABLY AFFECTS SEX-ROLE IDENTIFICATION WITHOUT NECESSARILY INFLUENCING INTELLECTUAL PERFORMANCE.

DEMOGRAPHIC FACTORS:

PRESENCE/ABSENCE OF FATHER.

RESULTS:

CHILDREN OF SINGLE MOTHERS SCORE LOWER ON GRIFFITHS GIQ LOCOMOTOR, HEARING AND SPEECH AT AGE ONE. (ECSPE).
NO SIGNIFICANT DIFFERENCE ON BAYLEY (ECSPE) WITHIN EXPERIMENTAL GROUP; DIFFERENCE BETWEEN BOYS WHO DO WELL ON MDI AND PDI IS ASSOCIATED WITH MATERNAL SELF-CONCEPT OF SINGLE MOTHERS (ETHERIDGE). MOTHER'S CURRENT MARITAL STATUS UNRELATED TO STANFORD-BINET SCORES AT AGE 5.

COMMENTS:

NO MEASURE OF CHILD SEX-IDENTIFICATION.
GENERALLY, MARITAL STATUS NOT CLEARLY RELATED TO INTELLECTUAL PERFORMANCE OF CHILD.

The Griffiths and our series items have been factor analyzed (Maurelli 1969, 1971) and we have begun studies across age on the various tests. We have, as I mentioned earlier, considerable data yet to be analyzed, particularly of the type in which early information is related to later performance.

IMPLICATIONS

Let us turn now to what it all might mean. At the simplest level, we have demonstrated the efficacy of one approach to parents of young children which has a lasting effect not only on the children but also on some aspects of family life. We have also demonstrated how such a program should not confine itself to only the traditional experimental-control design, but that much which needs to be learned comes from a program of multi-variate studies of factors within the experimental group, both demographic and personal, which influence the course of events. Our data show that the so-called disadvantaged group is by no means homogeneous, and that neither is the middle class group with whom we've worked in Follow Through and other spin-off programs. Programs, therefore, must move away from oversimplified and erroneous concepts built around such terms as either deficit or difference models. We need to move toward better subject-by-treatment designs. This will require of us the development of effective measures of parents' entry skills. Here, I believe we have made a contribution through the ISIS project.

As we examine our procedures, we know with much confidence that the basic model works. It can be done and it can be transplanted. We have also learned that the model is acceptable to parents across social class, income and ethnic lines. In spite of earlier criticisms

by some naive sociologists, the program, both in the infant and Follow Through projects is perceived by parents from all groups as helpful and desirable, as strengthening the role of the family and in supporting parents' desires for their children.

Of course, improvements in the delivery system need to be made, in keeping with what we have learned about parent educator-mother-baby interaction. Examination of the video-tapes, for example, shows that a major problem is convincing parent educators to be more open and flexible and less ordering and autocratic. It is a matter of training. With a video-tape system we can engage in a more careful prescription of the training operation than we were able to do earlier. We would want to capitalize on encouraging more of the ping-pong behavior than we did originally. We have developed a preliminary list of what we call desirable parenting behaviors which we did not have before. There is a task orientation problem when the parent educator demonstrates an activity with the child. The parent often zeroes in on the activity and forgets the child. There is a lack of attending to the cues the child is giving and an overriding of the child to get the activity done. We would now suggest: let the child stay with an activity without interruption if possible, attend more to the comfort of the child than to the activity, respond to what the baby is doing, play and talk with him. If the child is doing something, do not interrupt, let the activity you want flow from the child's behavior. That is a different stylistic element than we could have stated in 1966.

We have also developed a preliminary list of parent educator "do's and dont's". Parent educators interrupt mothers, pull the attention of the child

from the mother, do not play ping-pong with the mother. There is a good deal more precision we could introduce in training.

Another area which needs improvement is measurement of the affective domain--both for adults and children. Our results show, even with limited measurement tools, that there are relationships between maternal affective factors and child cognitive development, that there is a relationship between cognition and affect in the children, that the program has an impact beyond intellectual performance scores. However, we need far more knowledge, which requires better measurement, so that we can help parents in the affective domain to both view themselves better and relate to the child in mentally healthy ways which enhance his sense of self-esteem.

As in any such effort, although we have made progress, we have a way to go. It will take the cooperative work of many, a continued longitudinal thrust, and, of course, hard cash. I believe we have shown that such money is well spent, and meets not only human goals, but the nation's goals for sound and effective family life.

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APPENDIX A

Tables from I. J. Gordon, "A Home Learning Center Approach to Early Stimulation", Progress Report on Grant # MH-16037, NIMH. Gainesville: University of Florida, (1971 and 1972).

Stanford-Binet Factors
Used in Group Comparisons

Factor I Language

S-B Level	Description
II-6	Identifying Objects by Use
II-6	Picture Vocabulary
III-6	Comparison of Balls
III-6	Discrimination of Animal Pictures
III-6	Response to Pictures
IV	Pictorial Identification
IV	Discrimination of Forms

Factor II Memory

S-B Level	Description
II-6	Obeying Simple Commands
III	Picture Memories
III-6	Sorting Buttons
IV	Naming Objects From Memory
IV	Pictorial Identification

Factor III Perceptual Motor

S-B Level	Description
III	Stringing Beads
III	Blocking: Bridge
III	Copying a Circle.
III-6	Comparison of Balls
III-6	Patience: Pictures
III-6	Sorting Buttons.

Means and Standard Deviations for Three Standard-Binet Factors at Age 3 by Number of Years and Timing of Participation in the Stimulation Program

			Factor					
			Language		Memory		Perceptual-Motor	
Group	Years	N	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
1	all 3	27	3.30[a]	1.98	2.26[b]	1.48	3.00[c]	1.82
2	first 2	17	2.64	1.97	2.12	1.69	2.82	1.63
3	last 2	8	3.00	1.85	2.50	1.31	4.12[b]	1.25
4	1 and 3	11	2.91	1.70	1.73	1.27	2.82	1.17
5	1 only	10	2.10	1.60	1.40	1.17	2.30	1.49
6	2 only	10	2.00	1.41	1.60	1.08	1.90	1.45
7	3 only	56	2.78	1.75	1.75	1.38	3.39[e]	1.41
8	Controls	51	2.33	1.81	1.61	1.23	2.98[f]	1.64

a. Higher than groups 5, 6, and 8 $p < .05$
b. Higher than groups 5 and 8 $p < .05$
c. Higher than group 6 $p < .05$
d. Higher than groups 1, 2, 4, 5, 6, and 8 $p < .05$
e. Higher than group 5 and 6 $p < .05$
f. Higher than group 6 $p < .05$

Stanford-Binet Factors at Age 4

Factor I Cognitive Processes: Symbolic

S-B Level & Item	Loading	Description
(4)-1	.53	Picture Vocabulary
(4)-3	.82	Opposite analogies
(4)-4	.48	Pictorial identification
(4-6)-2	.51	Comprehension II
(4-6)-4	.84	Opposite analogies
(4-6)-4	.57	Materials
(5)-3	.42	Definitions
(6)-6	.46	Maze tracing

Factor II Visual Discrimination

S-B Level & Item	Loading	Description
(3-6)-2	.50	Patience: Pictures
(3-6)-2	.55	Discrimination of animal pictures
(3-6) 5	.52	Sorting buttons
(4)-1	.43	Picture vocabulary
(4)-5	.65	Discrimination of forms
(4)-2	.74	Naming objects from memory
(4-6)-1	.73	Aesthetic comparison
(4-6)-3	.63	Pictorial similarities and differences
(4-6) 5	.48	Three commissions
(5) 5	.60	Pictorial similarities and differences II

Factor III Cognitive Processes: Iconic

S-B Level & Item	Loading	Description
(3-6)-4	.41	Response to pictures
(3-6)-6	.41	Comprehension I
(4)-4	.41	Pictorial identification
(4)-6	.43	Comprehension II
(4-6)-4	.44	Materials
(4-6)-5	.49	Three commissions
(5)-1	.70	Picture completion; Man
(5)-3	.67	Definitions
(6)-6	.55	Maze tracing

Means and Standard Deviations for Three Stanford-Binet Factors at Age 4 by Number of Years and Timing of Participation in Program

			Factor					
			Cognitive Processes: Symbolic		Visual Discrimination		Cognitive Processes: Iconic	
Group	Years	N	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
1	all 3	24	3.67[a,c,e,g]	3.38	5.88[b,e]	3.85	4.21[b,f]	3.27
2	first 2	14	2.79[b]	2.86	5.79[b,f]	2.23	4.21[b,f]	2.58
3	second 2	9	2.78	2.82	6.44[b,e]	1.88	3.78	2.59
4	1 and 3	11	1.36	1.69	4.64	3.55	2.82	1.66
5	1 only	10	3.70[a,d,f,h]	3.47	5.90[b,f]	3.28	4.80[a,d,e]	3.22
6	2 only	15	1.60	2.20	3.40	2.67	2.40	2.20
7	3 only	54	2.11	2.16	5.74[a,c]	2.57	3.72[b]	2.11
8	control	52	1.50	2.13	4.29	2.66	2.85	2.15
			$F = 2.80$, $p < .01$		$F = 2.58$, $p < .05$		$F = 2.10$, $p < .05$	

[a]Higher than group 8, $p < .01$, one-tailed.
[b]Higher than group 8, $p < .05$, one-tailed.
[c]Higher than group 4, $p < .01$, one-tailed.
[d]Higher than group 4, $p < .05$, one-tailed.
[e]Higher than group 6, $p < .01$, one-tailed.
[f]Higher than group 6, $p < .05$, one-tailed.
[g]Higher than group 7, $p < .01$, one-tailed.
[h]Higher than group 7, $p < .05$, one-tailed.

APPENDIX B

Tables and figures from Gordon, I. J., & Jester, R. E. Instructional Strategies in Infant Stimulation. Journal Supplement Abstract Service. Catalog of Selected Documents, 1972, 2, 122. Final Report on NIMH Grant # 5-R01-MH-17347.

Means, Standard Deviations and Sample Sizes of
Mental Development Index Scores at Age Twelve Months

Method	Sex	Level						Overall
		Professional			Paraprofessional			
		$\bar{X}$	SD	N	$\bar{X}$	SD	N	$\bar{X}$
Child Taught	Male	77.19	17.40	16	87.92	13.35	13	82.56
	Female	93.69	14.25	16	88.36	15.95	14	91.02
	Combined	85.44		32	88.14		27	86.79
Mother Taught	Male	84.73	11.54	15	87.92	13.35	13	86.37
	Female	92.42	15.67	19	87.25	19.43	16	89.84
	Combined	88.58		34	87.63		29	88.10
Overall	Male	80.96			87.96			84.46
	Female	93.05			87.80			90.43
	Combined	87.01			87.88			87.44

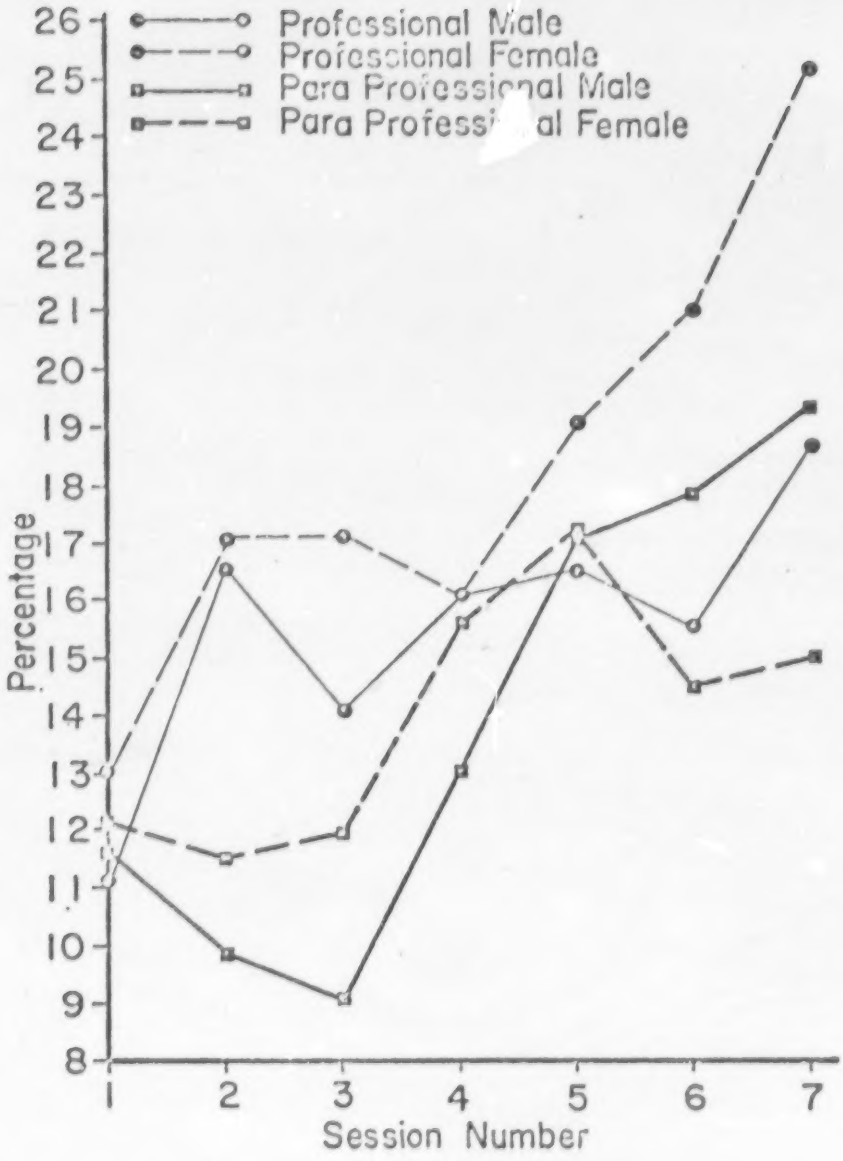

Fig. 10. Percentage of Interaction Between Mother and Baby, Mother Taught Group on RCS.

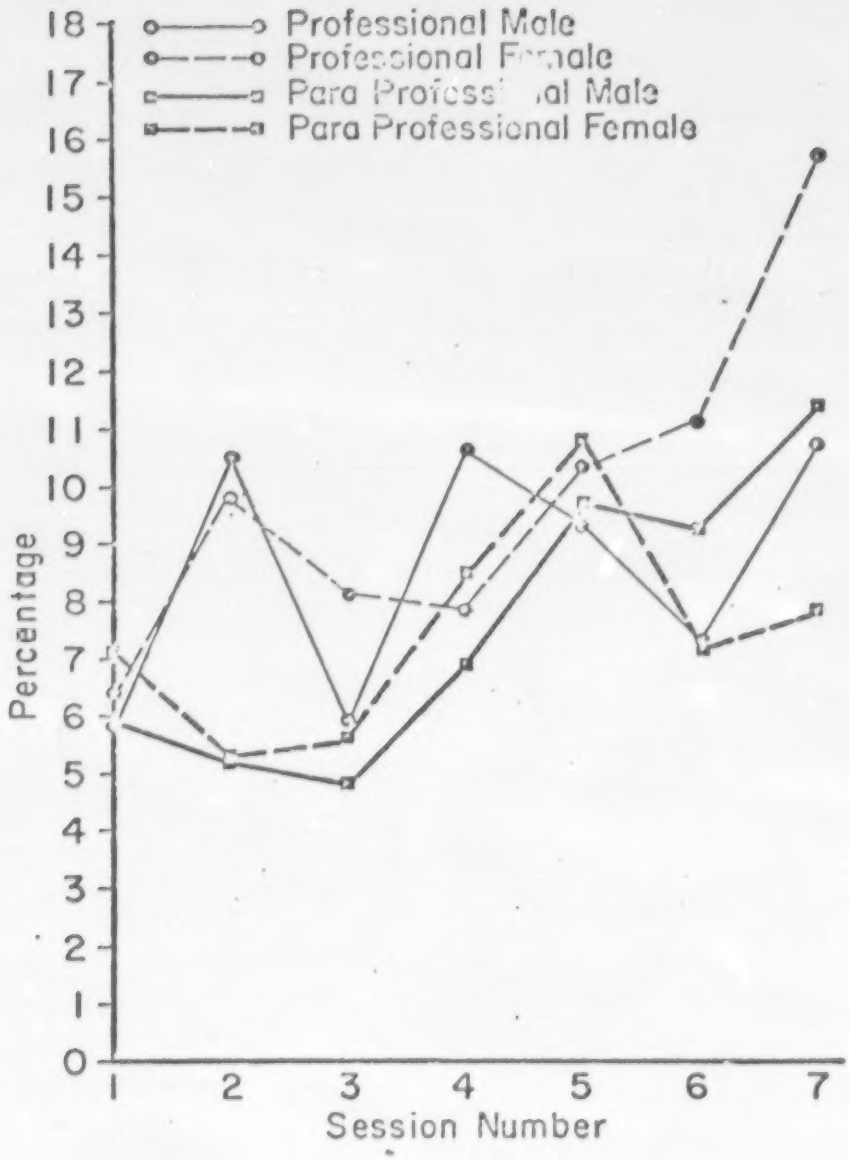

Fig. 11. Percentage of Instructional Interaction Between Mother and Baby, Mother-Taught Group on RCS.

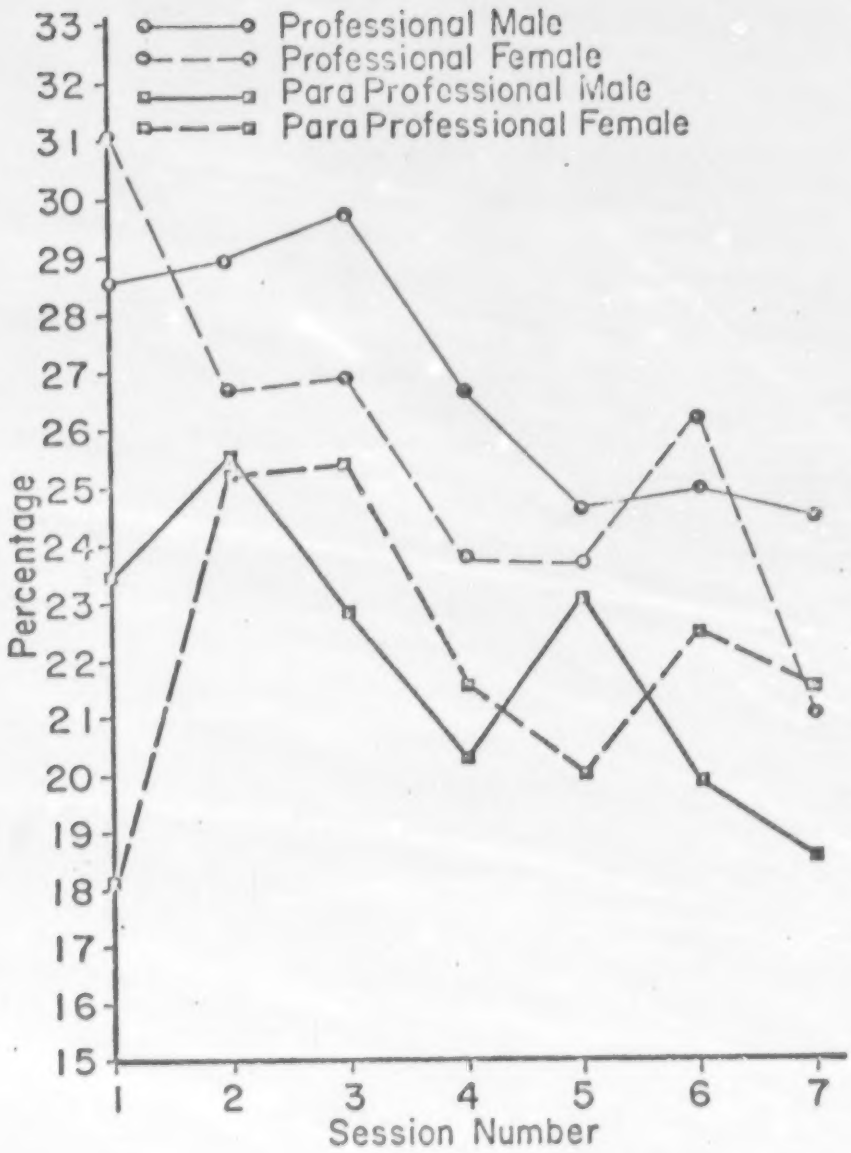

Fig. 19. Percentage of Sustained Parent Educator Activity, Child Taught Group on RCS.

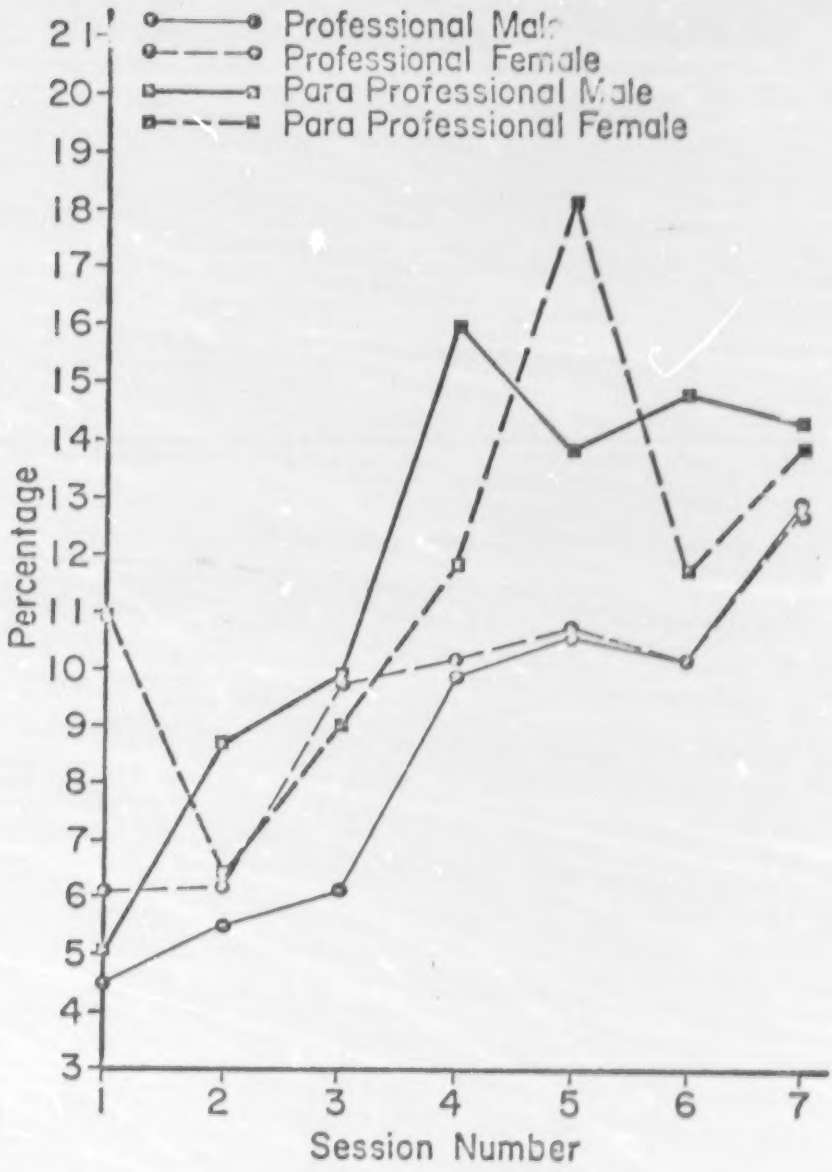

Fig. 20. Percentage of Sustained Baby Activity, Child Taught Group on RCS.

RCS Items Used as Criteria for Defining Teaching Skill

Categories	Behavior Description
Instructional Interaction	
15/26	Baby responds, mother initiates
24/15	Mother elicits, baby responds
26/15	Mother initiates, baby responds
27/15	Mother directs, baby responds
15/24	Baby responds, mother elicits
15/27	Baby responds, mother directs
Affective Interaction	
11-19/21,22,23	Baby behaves, mother warms, accepts, amplifies
Baby Sustained Activity	
15/13	Baby responds, baby amplifies

Mean Percentages, Standard Deviations, and Correlation Coefficient Between Behaviors Observed from 37-49 Weeks and MDI Scores at 52 Weeks

Variable	Mean percentage	SD	r with MDI
Mother Taught (N = 63)			
Bayley Mental Score	88.35*	15.84	
Total Baby-Mother Interaction	17.97	8.5	.27**
Mother-Baby Instructional Interaction	9.9	6.2	.29
Mother Initiates/Baby Responds	1.8	1.3	.40
Baby Responds/Mother Initiates	1.6	1.3	.34
Mother Directs/Baby Responds	1.3	1.2	.36
Child Taught (N = 61)			
Bayley Mental Score	86.74*	16.53	
Sustained Parent Educator Activity	23.0	6.0	-.49
Sustained Baby Activity	12.8	4.7	.33
PE Elicits/PE Initiates	2.6	1.3	-.29
PE Initiates/PE Directs	2.3	1.1	-.42
PE Initiates/PE Initiates	2.2	1.5	-.36
PE Directs/PE Elicits	1.8	1.0	-.34
PE Directs/PE Initiates	1.7	0.9	-.33
PE Elicits/PE Directs	1.7	0.8	-.27

*Scores, not percentages

**$r = .25$; $p < .05$